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OVERNMENT RESEARCH AND DEVELOPMENT DIGEST

VOL. 2, NO. 12

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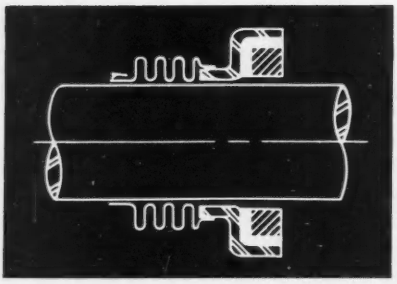
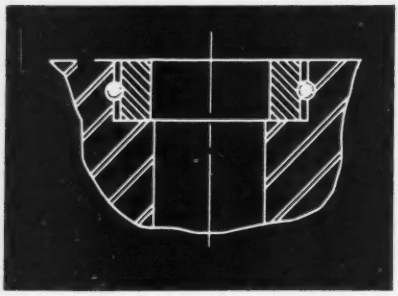
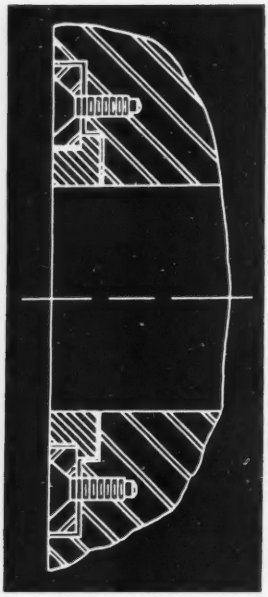
n this issue . . .

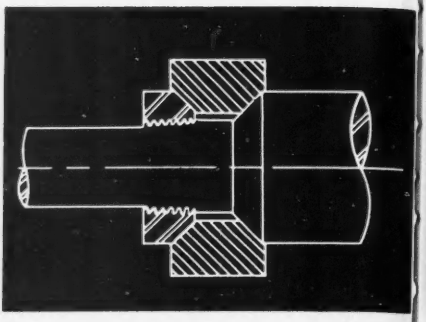
MORE NEWS ON PIED PIPER

PERFORMANCE REPORT FROM KENNAMETAL*









FOR DESIGNERS WITH A SEALING RING PROBLEM

If you have any sealing ring problem that demands . . .

1. The ability to resist elevated temperatures, or **2.** Unusual resistance to severe corrosion, or **3.** Extreme resistance to abrasion.

KENNAMETAL has some proven answers for you

ELEVATED TEMPERATURES. A jet engine shaft seal of Kentanium,* a titanium carbide, operating without lubrication at 15,000 surface feet per minute under 0.3 to 0.6 lbs. pressure per lineal inch of circumference and 900° to 1000° F, outperformed every other material. Kentanium Rings are stress-free—do not tend to split radially, maintain original face flatness even at high temperatures, and have exceptional wear and resistance strength.

SEVERE CORROSION. Where corrosion and abrasion are present, Kennametal has seal rings of Grade K501, a platinum-bonded carbide. Used as seals to confine liquid oxygen or fuming nitric acid, sealing results are reported as "far superior to any previously used materials, with no indication of face wear."

ABRASION RESISTANCE. Kennametal tungsten carbide sealing rings installed in a deep-well rotary pump gave one to two years' service; packing type seals had failed in two to four weeks. Kennametal rings in a recirculating pump, handling water with fine grains of iron oxide, lasted 30 to 60 *days*. Packing type seals failed in 24 to 48 *hours*.

Other desirable characteristics of Kennametal seals: high modulus of elasticity, low expansion under heat, high resistance to wear and much lower service cost. For more information, ask for "Characteristics" book. Address your request to: KENNAMETAL INC., Latrobe, Pennsylvania, Dept. DT.

**Kennametal and Kentanium are the trademarks of a series of hard carbide alloys of tungsten, tungsten-titanium and tantalum.*

INDUSTRY AND **KENNAMETAL**

. . . Partners in Progress

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Micropoise Relay

Really New?

A NEW MAGNETIC CONCEPT CREATES A NEW RELAY WITH

4 OUTSTANDING IMPROVEMENTS

1. **Vibration** (100 to 2000 CPS at 15g)
2. **Reduced weight** (40% weight saving)
3. **Reduced size** (⅓ the cube of competitive designs)
4. **Withstands impact** (100g -- 11 ± 2 milliseconds) making this new MICROPOISE RELAY ideal for missile programs, the ever increasing more exacting aircraft control requirements, and for highly reliable electronic computer applications.

DIAPHLEX

A DIVISION OF

Cook Electric Company

2700 Southport Ave., Chicago 14, Illinois

Diaphlex—Aircraft Components and Accessories. **Cook Research Laboratories**—Basic & Applied Research. **Inland Testing Laboratories**—Qualification, Environmental, Reliability and Radiation Testing. **Magnilastic**—Expansion Joints and Large Scale Metal Fabrications. **Wirecom**—Wire Communication Protection & Distribution Equipment. **Electronics Systems Division**—Engineering and Production of Electronic Gear. **Airmod Corporation**—Modernization, Modification, and Maintenance of Aircraft. **Nucledyne Corporation**—Engineering and Design of Technological Facilities. **Cinefonics Inc.**—Motion Picture Production. **Canadian Diaphlex, Ltd.**—Aircraft Components and Accessories.

A letter from the Secretary of the Army

To the Editor of DATA Magazine:

I firmly believe that the future holds great opportunity for small contractors and subcontractors in the field of Army Research and Development.

The over-all field itself -- basic, applied and development research -- must be constantly explored, and it is expanding rapidly. Within Army Research and Development, prime contracts with all business firms rose from about $393 million for FY 56 to about $439 million for FY 57.

From present indications, Army Research and Development will probably increase in selected areas, such as the missile field.

Our Army R&D effort continues to rely on more and more of the physical and social sciences as our Army's equipment becomes more atomic, electronic and supersonic; and as the requirements become more advanced and complex for our fine fighting men.

Of course, we count on the larger firms for much of our work because of the complex nature of the major items required. But at the same time, so much of what we do is in new or highly specialized areas that I am sure we shall continue to rely on newer, smaller or specialized contractors and subcontractors.

It is our firm policy to award R&D contracts to the firm submitting the best offer, price and other factors considered, regardless of the size of the firm, provided the firm submitting the best offer has the requisite engineering, technical, and financial capability to perform the desired services.

The Army wants to make it as easy as possible for small firms to obtain R&D contracts. We are prepared to cooperate to the fullest extent with representatives of small business by providing comprehensive information about opportunities for participation in the program, and the procedures involved.

Wilber M. Brucker

Wilber M. Brucker
Secretary of the Army

Editor's Footnote: The Army booklet, "Contractors' Guide -- Research and Development in the U. S. Army," has proved helpful to those interested in Army R&D contracts. Copies may be obtained at no charge by writing to: Office of the Chief, Research and Development, Department of the Army, Washington 25, D.C., ATTN: Technical Liaison Office D.

The United States has many plans and projects under way to overshadow Russian preliminary spaceflight success. The contract to Lockheed on the PIED PIPER reconnaissance satellite (announced to DATA readers in our special letter of Nov. 25) is only one of many new space weapons systems in the works.

Before going on to tell you the latest developments on the PIED PIPER and other space projects, we feel we should let you in on a Pentagon rumor... perhaps an insight into something soon to come. Here it is: There is a possibility that a special body such as the Joint Chiefs might replace the President as the executive controller of this nation's missile and satellite programs. Since President Eisenhower's most recent illness, conjecture has been raised as to the feasibility of a special body, rather than a missile czar making executive decisions on space weapon systems from initial planning right through to operational use. This would not be an advisory body, though it might be titled as such, but would actually be a policy shaping organ.

THE PIED PIPER PROJECT:

Most recent development: Admiral Corp. making strong bid to get contract for satellite tv installations and supporting ground equip.

Designation: WS-117L. Contractor: Lockheed. AF code name: PIED PIPER. Lockheed identification: ARS for Advanced Reconnaissance Satellite.

Massive and elaborately equipped satellite designed to orbit 800 to 1100 miles from earth with television scanners and facilities for transmission to ground stations. Detailed plans for manned version also underway. Rand Corp. has been conducting design studies for 10 years. Original planning on manned version began by AF in 1955.

Initial budget on PIED PIPER of $4 million early in 1956 was increased in same year to $12 million. Original schedule for this weapon system development has been accelerated for unmanned test vehicle first launch target date is scheduled for late 1958. AF sources have revealed hope of having manned WS-117L in space by 1960. Admitted as optimistic but considered quite possible in line with current development.

Success of PIED PIPER depends on other space projects. Main two: Douglas D-558-Phase III and North American X-15.

DOUGLAS D-558-III:

Douglas D-558-Phase III is an extremely advanced rocket powered

space conditions research vehicle. The Phase III is to be manned aircraft employing booster rockets in attempts to reach altitudes above 135 miles. D-558-Phase III is designed for ground launch in present configuration. Phase III could be placed in orbit for brief duration. No dates for first trials released.

NAA X-15:

Nearing completion and scheduled to be flown in 1958, North American Aircraft's X-15 manned research test vehicle will use 60,000-lb. thrust liquid propellant motor to shove it up from air-drop to 520,000-ft. altitude. Motor: XLR-99, developed by Reaction Motors, Inc. Speed expected to be between 7 and 9000 mph. X-15 features "variable geometry" wings, has artificial cockpit illumination to overcome problem of "glare-out" at extreme altitudes where there is not enough atmosphere to diffuse light. X-15 uses jet reactors for control in thin air.

BELL ORBITAL BOMBER:

Bell Aircraft either has by now or will soon receive negotiated contract to build a rocket-boosted "orbital bomber" for AF. Manned space bomber is reportedly designed for speeds in range of 14,000 to 18,000 mph. Weapon system would orbit earth as either reconnaissance craft or bomber and would accomplish re-entry with aid of reverse-thrust rockets and at lower altitudes use parachute. Orbit altitude would be 200 to 300 miles above earth.

POWERPLANT OF NAVAHO HAD 405,000-LB. THRUST BOOSTERS:

With all the talk of USSR's Model 103 liquid propellant motor (burning kerosene and liquid oxygen) of approximately 264,000-lbs. thrust, few people have been informed that NAVAHO booster mounted three NAA motors with a combined thrust of 405,000 lbs. Aerojet-Gen. is working on propulsion unit of at least as much thrust... have developed "extremely effective" motor for TITAN missile.

DOD DIRECTIVE 7800.6 OF NOV. 1ST:

New directive cuts progress payments further (as predicted by DATA in Oct. issue). In general, 7800.6 forces contractors to tie up more of own cash. Cost-plus-fixed-fee contractors no longer eligible to benefit from Government financing all costs for inventories.

PERSONNEL CHANGES:

V/Adm. J. L. Holloway, Chief BuPers, gets fourth star, will replace Adm. W. F. Boone, C in C Nav Forces Eastern Atlantic and Med. Adm. Boone to replace Gen. L. W. Johnson as U. S. rep to mil committee of NATO. New Bureau of Personnel head will be V/Adm. H. P. Smith, since Oct. '56 Chief of Staff and Aide to Adm. Jerauld Wright. Smith reports BuPers Dec. 20. Moving to assignment vacated by Smith is V/Adm. Lorenzo S. Sabin, presently PhibLant commander.

Capt. E. J. Peltier, USN CEC, has been named new Chief of the Bureau of Yards and Docks. He succeeds R/Adm. R. H. Meade who is retiring.

FOREIGN BRIEFINGS:

Atomic Energy Commission office in Japan opened Nov. 15 in Tokyo. W. H. Pennington of AEC senior staff named head Tokyo office.

Russians announce their new Mil-6 helicopter will carry 12 tons, say Tu-104 jet airliners will begin regular commercial service between Moscow-Budapest, Moscow-Petropavlovsk.

Color tv in Cuba inaugurated Oct. 24. Cuban color tv station is first outside U. S. Using RCA equipment, color operations are on 20 hours each day. Filmed news, other features flown to Havana daily from N. Y., Miami, Mexico City and Madrid.

W. Germany now has more than one million tv receivers. About one in ten W. German families have tv, reports W. German Post Office.

Current issue of Venezuela Up-to-Date, Venez. Embassy magazine, says U. S. citizens form third largest immigrant group in Venezuela. First come the Italians with 145,000. Next, Spaniards, 132,000. U. S. sends 41,000.

German firm will modernize Argentina's phone system. Contract for $55 million went to Siemens-Schuckertwerke A. G. of W. Germany to provide coaxial link-ups between Argentine major cities, install 300,000 new phone lines and automatic switchboard equipment, and provide 400,000 new phones throughout Argentina. Buenos Aires, Rosario, Santa Fe, Mar del Plata and Chivilcoy will get modernization.

***GENERAL OUTLOOK:** Aircraft continue lagging. Increased spending by DOD in missiles, satellites, is spotty, doesn't spread evenly in industry. Helicopters very slow, Vertol lays off more workers. Military airframe producers eye civilian markets. Republic Aviation in bad shape, has only handful of F-105s in Air Force order, lays off workers, looks for other markets. Grumman will enter civilian field with exec transport, GULFSTREAM, eyes crop spraying, dusting, may market small bi-plane sprayer.*

552. AF TO CONSTRUCT MISSILE SITE AT WARREN AFB:

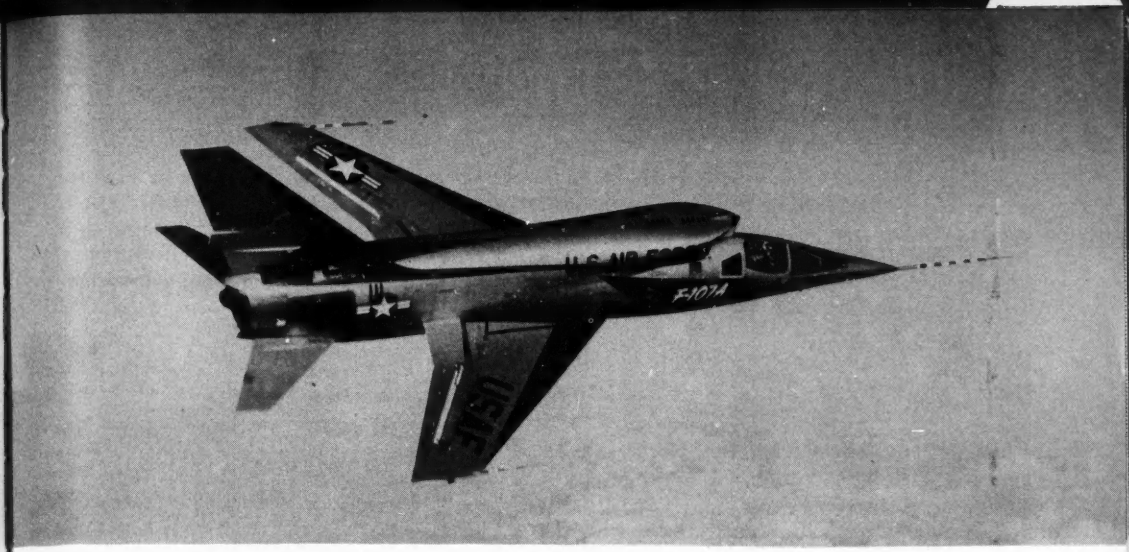
In a Nov. 21 announcement, Dept. of Defense said construction on missile site at Francis E. Warren AFB, Wyoming, is scheduled to start in middle part of 1958. Construction is estimated to cost in excess of $65 million. DOD said further that 4 to 5000 additional personnel will be required to operate new missile facility. ///Pentagon OPI 1121/

553. ARMY HAS ELECTRONIC WEATHERMAN FOR HIGH ALTITUDE:

New system spots high-altitude indications of oncoming storms, hurricanes, tornadoes and other bad weather faster, more accurately than any previous device. The big difference: computers. Specially designed computers of system work in conjunction with radio-carrying (radiosonde) balloon. Coded radio signals are sent back to "brain." Second high-speed computer calculates winds faster and at greater range than has ever before been possible. Ft. Monmouth SigCorps engineers developed, say will replace computerless weather equipment now in use by mil services and weather bureaus. ///Pentagon OPI 1123/

554. AEC, DOD JOIN TO PLAN NUCLEAR POWERED A/C, MISSILES:

In a special "For the Press" release of Nov. 20, Dept. of Defense announced an "integrated project office" to be established to manage the application of nuclear power for the propulsion of aircraft and missiles. Air Force gets job of engine development, other work. AEC will be responsible for reactors. Maj. Gen. D. J. Keirn, USAF, will head new office. Navy will also participate, release states, and new office - to be located in Hq. of AEC, will be staffed by personnel from AEC, USAF and Navy. No mention of Army given. Gen. Keirn will continue to wear his other caps: Chief of Aircraft Reactors Branch of AEC and Assistant Deputy Chief of Staff for Development for Nuclear Systems of USAF.
///Pentagon OPI 1120/



NEW NAA F-107 is research vehicle for NACA. Uniquely designed jet houses J-75 Pratt & Whitney, rated in 20,000-lb. thrust category, in overhead duct said to improve engine efficiency. Speed of North American F-107 said to be in excess of 1300 mph. All-moveable vertical fin and all-moveable horizontal stabilizer are used. Spoiler flaps replace conventional ailerons in lateral control. ***///North American 1120/***

555. NEW TYPE AF CORROSION INDICATOR DEVELOPED:

Simple, inexpensive indicator reveals tell-tale signs of corrosion before it affects equipment. Based on principle that thin metal film deposited on suitable base changes color when it corrodes, degrees of corrosion of underneath member can be checked visually. Also, electrical resistance of film changes with oxidation, can be measured. Developed by ARDC's Wright Air Development Center, Ohio.

///ARDC 1125/

556. AF HAS NEW SUPERSONIC PITOT TUBE:

ARDC has developed new supersonic pitot tube that is superior method of transmitting air pressure to airspeed indicator. New type has knife edge opening instead of blunt edge formerly used. Works better on ultra-high speed aircraft. ///ARDC 1101/

557. AIR "JUMPING JACK" SIMULATES TURBULENT FLIGHT:

A "Jumping Jack" machine is now used by ARDC. It bounces man up and down to test him in rough flying weather. ///ARDC 1018/

COMMUNICATIONS / ELECTRONICS

***GENERAL OUTLOOK:** Increased spending in all forms of electronic gear. Avionics especially favorable with increased interest in missiles and satellites to make picture even brighter. More complex electrical systems in all military equipment make ground support gear, underwater devices lucrative electronic market. Industry shaking down. Too many companies. They can't all get share. Government looks to help small producer, wants more standardization, automation in the industry.*

558. RADAR RADIATION HAZARDS LISTED BY BUSHIPS:

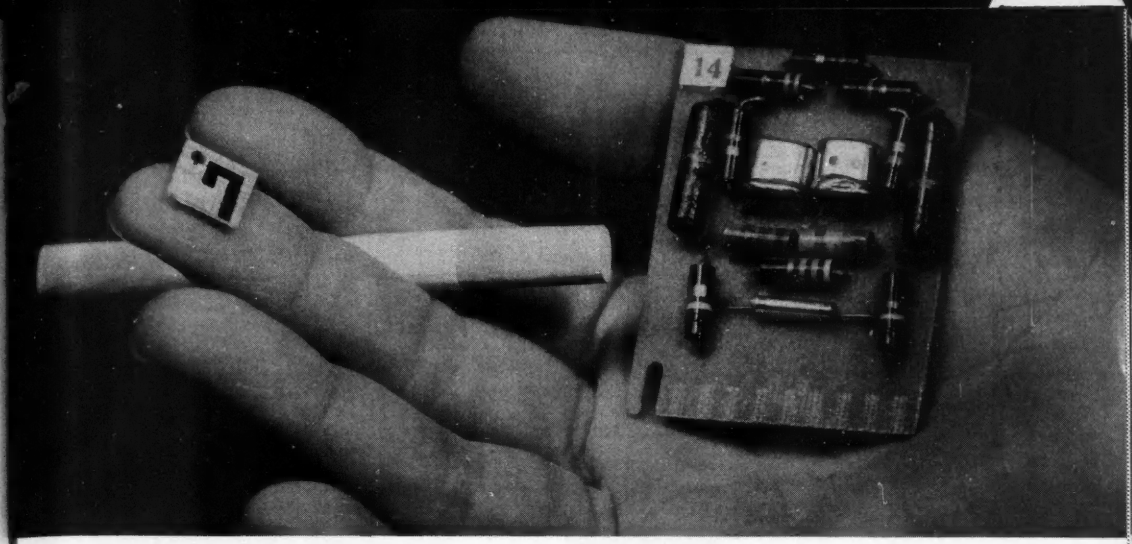
BuShips notice 9672 warns personnel of dangers from radar radiation. Precautions will be included in change 16 to chapter 67 of BuShips Manual. Warnings are given as to minimum distance personnel should be in axis of beam on non-rotating antennas and horizontal beam of rotators. Notice also given not to expose photoflash bulbs to radar beams even at considerable distance. ///Bureau of Ships/

559. REA APPROVES 14 ELECTRIFICATION LOANS:

Recent REA action approved 14 electrification loans at total of $7,1 million. Firms and sums involved include: Henderson-Union Rural Electric Coop. Corp., Ky., $815,000; Atchison-Holt Electric Corp., Port Rock, Mo., $630,000; Habersham Electric Membership Corp., Clarkesville, Ga., $145,000; Hardin County Rural Electric Coop., Iowa Falls, Ia., $166,000; Southwest Louisiana Electric Membership Corp., Lafayette, La., $1,030,000; McCone Electric Coop., Circle Mont., $770,000; Mitchell County Electric Membership Corp., Camilla, Ga., $515,000; Lumbee River Electric Membership Corp., Red Springs, N.C. $645,000; Verdigris Valley Electric Coop., Inc. Collinsville, Okla., $1,120,000; Somerset Rural Electric Coop., Somerset, Pa., $835,000; Desert Electric Co., Twenty-nine Palms, Calif., $236,000; North Pine Electric Corp., Finlayson, Minn., $497,000; Aiken Electric Corp., Aiken, S.C., $355,000; Cuming County Rural Public Power District, West Point, Nebr., $207,000; Marshall County Rural Electric Membership Corp., Plymouth, Ind., $310,000; and Burke-McDowell Electric Membership Corp., Morgantown, N. C., $685,000. ///USDA 2822-2877-3017/

560. ANTENNA OF NAVY JET ALSO EMERGENCY ARREST HOOK:

Lockheed T2V-1 SEA STAR has fish-hook antenna that will take jerk-to-stop pull of 15,000 lbs. ///Nav Air News 11-30/



ARMY PRINTS TRANSISTORS, *produces transistor about 1/20th of an inch wide and 1/100th of an inch high and provides increased reliability and resistance to shock or vibration. Small "dot" on board upper left is new transistor, compared in size to transistor presently used and cigarette.*
///Army Photo 1118/

561. PRINTED TRANSISTORS TO CUT SIZE OF ELECTRONIC GEAR:

Printed circuit method of making transistors announced by Army Nov. 18. Developer, Dr. J. W. Lathrop of Army's Diamond Ordnance Fuze Lab in D. C., proved metallic ink can be used to print transistors, eliminate complicated wiring. Army calls invention "missing link" in quest to reduce bulk, weight of electronic equipment, forsees military electronic gear one-tenth present size due to this development. Civilian applications unlimited.

Technically, method starts with tiny wafer of germanium metal. Photosensitive film added for positioning mask, placed on minute ceramic plate. Microscopic electrodes formed by metal vapor deposit.
///Pentagon OPI 1118/

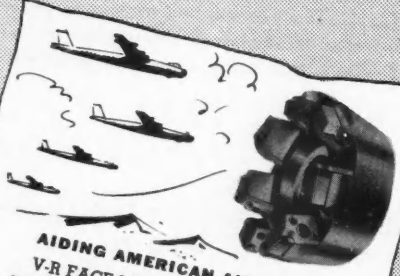
562. ELECTRONIC DATA PROCESSING FOR ARMY POSTS:

Systems capable of handling 170,000 records and 2,000,000 pertinent facts will be fully operational at four Army SigCorps posts by Jan. 1, 1958. Signal depots slated to get the high-speed electronic data processing systems are located at Tobyhanna, Pa.; Lexington, Ky.; Decatur, Ill.; and Sacramento, Calif. ///Pentagon OPI 1119/

FROM V-R

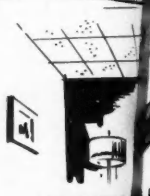
BUILDING BETTER ROADS

V-R CARBIDE ROCK BITS are setting new performance records across the nation on all types of construction projects. Their success lies in a V-R carbide developed exclusively for percussion bit use.



AIDING AMERICAN AIRPOWER

V-R FACE MILL CUTTERS with throw-away carbide inserts reduce milling costs up to 50% or more . . . make better parts faster for everything from aircraft to air conditioners.



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MAKING MINING SAFER

V-R CARBIDE ROOF BITS drill holes for roof bolting, reducing dangerous "roof fall," making mines safer. Other V-R mining bits speed extraction of coal and ore.

"AUTOMATING" AUTOMOBILES

V-R TOOLHOLDERS AND CARBIDE INSERTS have drastically reduced the cost of making automatic transmissions, power steering, power brakes and other automatic mechanisms that make driving safer and simpler.

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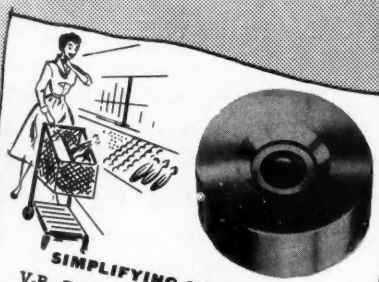

SIMPLIFYING SHOPPING

V-R CARBIDE DIES for economical drawing of wire, rod and tube used to produce everything from curtain rods to wire for super market baskets.

EASING WASHDAY WOES

V-R CARBIDE CUTTING TOOLS provide long tool life and low machining cost for manufacturers of automatic washing machines, dryers and dozens of other household appliances that make modern living better and easier.

From automobiles to telephones, vacuum cleaners to chemical plants, there are products and services made available to the public in greater abundance at lower cost because of V-R metals and tools.

Wherever there is machining, V-R cutting tools, cemented carbides and Tantung cast alloys are increasing human productivity and reducing costs.

In the mining, quarrying, petroleum and construction industries, V-R carbide tipped rock bits drill faster for less.

V-R carbide dies are saving thousands of dollars annually and increasing production for the wire, tube and rod producing industry.

In woodworking and match-making . . . in food and chemical processing . . . and in a hundred other places, V-R cutting tools and wear parts are helping make products better and faster.

Investigate V-R products . . . learn where they can help you. Use the convenient coupon to secure V-R literature.

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- ☐ Coal Mining Bits
- ☐ Carbide Drawing Dies

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CONSTRUCTION

GENERAL OUTLOOK: *Very good for contractors. More missile sites, increased need for personnel housing, special projects make need for more construction. Look for overseas U. S. Government construction projects to increase as well. Projects, in general, becoming more vast, require more of everything. Costs of building continues to rise.*

563. EXPANSION AT MISSILE CENTERS AND AIR BASES:

Construction expansion for following centers announced: Holloman AFB, N. Mex. (ARDC), $12.5 million; Hanscom Field, Mass. (ARDC), $8.4 million; Naval Air Missile Test Center, Point Mugu, Calif., $3.8 million; White Sands Proving Ground, N. Mex., $16.5 million. ///Cong. Hearings/

564. NEW JET FACILITIES AT BEAUFORT, S. C. TAKE SHAPE:

Master jet plane installation at former NAS site at Beaufort, S. C., will have cost estimated $37 million by June 30, 1958. Additional 1061 acres will be used for Capehart housing. Expansion of 4890-acre base into full-sized Marine Corps Air Station demands extensive construction. Responsibility rests with CAPT Peter Corradi, USN, CEC, 6ND, Charleston, S. C. CDR E. F. Martiny is immediate project supervisor at Beaufort. Work is well underway, many buildings completed. ///CEC 10-12/

565. NUCLEAR CENTER FOR PUERTO RICO:

AEC and University of Puerto Rico have signed contract, begin construction on $2,800,000 nuclear training center. Objective is development of comprehensive research and training program in Spanish for both Puerto Rican Americans and other Latin American students. Nuclear science in engineering, medicine, agriculture and general industry will be studied in special courses. AEC will pay for expense and operation of center, Univ. of P. R. will administer and manage it without charge. ///AEC 1182-10/

566. RADIO ASTRONOMY OBSERVATORY:

Five million dollar National Radio Observatory at Green Bank, W. Va. begins construction. National Science Foundation project. ///NSF/

***GENERAL OUTLOOK:** U. S. bent on winning race for technical supremacy sees energy development as most important aspect. Propulsion of missiles is highest on energy priority list. Electronic accelerators, nuclear power-plants, even power by light - Photonic Drive - being worked on feverishly. Progress looks good. British claim hydrogen fusion, ONR looks to the sun.*

567. BRITISH CLAIM HYDROGEN FUSION REACTION IN LAB:

British Atomic Energy Authority announces its scientists have produced first controlled thermonuclear reaction in laboratory experiment. This is first known artificial fusion outside hydrogen bomb explosion. BAEA says temperatures of more than 1.8 million degrees (F) were achieved. Implications of this accomplishment are (1) possible more intense, more compact, cheaper source of power than present atomic power plants, (2) thermonuclear power for missiles. ///BAEA/

568. QUEST FOR HARNESSING SOLAR ENERGY:

Current Office of Naval Research RESEARCH REVIEWS, has six-page article by Hans Gaffron of Univ. of Chicago on Photosynthesis and Solar Energy Projects. Much has been whispered at ONR regarding desire for more basic research on sun, need for power source cheaper than atomic energy to provide heat, power, even food from sun. This article reflects this thinking. Article states, "...we shall need energy not only to satisfy the present 2-1/2 billion people of the world, but enough for perhaps two or three times that many. While we ponder this predicament, the sun shines impartially upon all the countries of the earth. If we could develop new artificial means by which to collect that part of its energy contained in ordinary daylight, and channel it into our industrial machinery, our prospects would be much brighter." ///ONR/

569. SILENT POWER IN ARMY'S NEW ELECTRIC FUEL CELL:

New fuel cell produces electricity economically through conversion of chemical energy of gases. Adapted to power Army's new "Silent Sentry" miniature radar set, when fully developed new battery is expected to eliminate need for bulky, noisy motor generators in many other types of equipment. Developed for Army by National Carbon Co., silent power cell was displayed recently at Ft. Huachuca, Ariz.

///Army Info. 11-11/

570. NEW MUFFLER ARRESTS SPARKS, FLAME:

Army Engineers, Ft. Belvoir, Va., announce two-section muffler, 100 percent effective in suppression of spark and flame. Designed for fork-lift trucks of 4000-ton capacity, can be adapted to larger trucks or other gas engine powered devices. In tests muffler has reduced exhaust gas temps to 240 degrees (F) -- well below 350 (F) max for warehouses, storage spaces, etc. New muffler built for Army by Fluor Corp., Whittier, Calif. ///Tech. Liaison Office, Ft. Belvoir R&D 11/

571. PUSH-BUTTON CHOO-CHOO AT SAN ANTONIO:

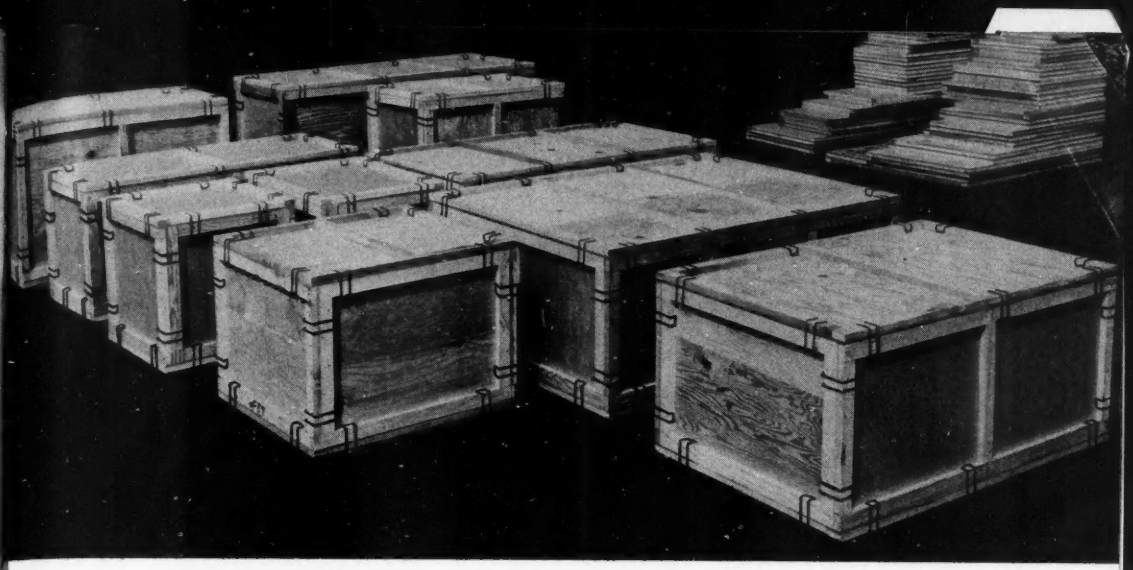
Over three miles of track at San Antonio AMA, five sturdy little trains, each pulling 29,000 lbs. freight, gad about five large warehouses without human touch. Trains follow buried copper wires around 90 degree curves, across streets, through narrow aisles. At each of four stations in warehouses trains stop, toot whistles for attention. If no one comes to unload within two minutes, train takes off for next stop. Safety equipment includes rotating light, Klaxon horn, automatic stop at red light intersections. Additional electronic guidance gear planned that will make it possible for trains to automatically uncouple designated dollies, move them to a siding, re-couple and continue on trip. AMA says electronic robot trains so smart that human beings watching them develop inferiority complexes. ///AMC Worldwide, Wright-Pat. 11/

572. ARMY ENGINEERS DEVELOP AIRBORNE MAINTENANCE SHOP:

Maintenance unit, 9000 lbs., meets urgent need for military equipment repair station that can go anywhere. Mounted on standard 3/4-ton truck chassis, steel constructed shop can be air-dropped to inaccessible areas. Unit developed by Army Engineers at Ft. Belvoir who state use of such a repair unit during WWII would have greatly reduced large number of broken-down, sidelined equipment during war. ///Army Info/

573. BATTLE-FRONT LOX PLANT:

Army Engineers have developed compact, mobile, battle-front industrial plant that will make large quantities of liquid oxygen used in propelling large missiles. Mfgr: Air Products, Inc. ///Ft. Belvoir 11/



CLAMP CALLED "KLIMP" invented by North American packaging engineers some months ago has grown in popularity to extent that new company has been formed to handle. NAVAN Products, Inc., now advertises number of different packing cases possible from different sized panels and "klimp" fasteners. States 159 different boxes possible from 47 panels and few hundred "klimps." "Klimp" used by both Air Force and Navy. ///BuAer and Navan Products 1118/

574. BENDABLE CERAMICS BEING DEVELOPED BY AFOSR:

Air Force Office of Scientific Research study at Univ. of Calif. is designed to produce bendable ceramics in answer to high temp problems. Initial success with magnesium oxide crystals promising. If possible to develop further, whole new world of applications open to ceramics, everything from turbine blades to aircraft/missile frame components. AFOSR especially interested in "cast aircraft fuselages" and "pre-stressed ceramic wings." ///AFOSR report 11/

575. CHEAP WAY TO MAKE FRESH WATER FROM SEA:

Maxim Silencer Co., leading supplier of sea water distillation equipment to Navy, has announced new system of converting sea water to fresh water that could be delivered to an urban water system " at something around 20 cents a thousand gallons." Company describes system as evaporation process with flash evaporators and vacuums designed to make fullest use of heat source. An important feature is a method of snapping salt scale from the equipment. More information is available from Maxim Silencer Company, Hartford, Conn.

///Navy Times 1116-21/

576. NEW LIGHTWEIGHT PLASTIC CARTRIDGE CASE:

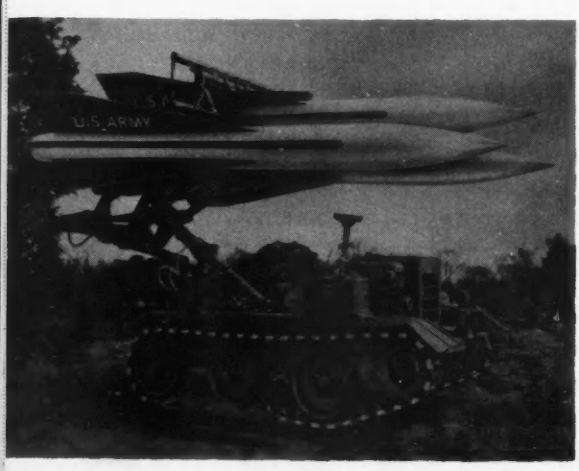
Plastic cartridge case developed for Army by Naval Ordnance Lab is cheaper, weighs less, can be re-used. Made of styrene copolymer with steel base for hammer percussion, cases weigh less than half of comparable steel or brass cases. Borg-Warner developed the materials for the case in accordance with specs from NOL. Simple injection moulding used. Army will now make cost studies. If favorable, traditional metal cases will be replaced. ///Naval Ord Lab 1120/

577. LOW-TEMP FIRE EXTINGUISHER:

Two and one half gallon low-temp fire extinguisher, pressurized by solid fuel cartridge, with temp range from room temperature to -65 degrees (F) has been developed at ONR. Solid-fuel cartridge produces gas continuously and at constant rate during operation. More fluid can be loaded into extinguisher than ordinary commercial extinguisher of same size, and expulsion rate and distance are practically constant. ///ONR Research Reviews 1019/

578. FLEET GETS NEW BOMB HOIST:

Portable electric bomb hoist is under evaluation, slated for fleet-wide use. Weighing 47 lbs. AERO 17A bomb hoist lifts up to 2500 lbs. at rate of 15 ft./min. AERO 17A requires single electrical cable connected to either deck-edge receptacle or portable power unit. Hand crank can be used when power not available. Hoist accurately raises loads up to 13 ft. within 1/32 of inch. Contractor: Douglas Aircraft. ///NA News 11/



ARMY TRACTOR HAWK MISSILE LOADER

Tractor driven army HAWK missile loader makes it possible to quickly transfer three "birds" at a time from storage area to launcher. Loader and other integrated units help give HAWK system speed and mobility of operation. Loader, self-propelled and highly maneuverable, negotiates rough or muddy terrain. Raytheon is HAWK prime contractor with complete weapon systems responsibility. Northrop Aircraft is principle sub-contractor for airframe components and support equipment. ///Army Photo 1028/

***TANK-MOUNTED MINE-EXPLODING ROLLER** clears pressure activated mines before tank tracks reach danger point. Eliminating time consuming search and removal of mines, roller will help keep armored units on move during any future conflicts. Roller can be assembled and installed quickly by field personnel. Fabricated of high strength steel, it absorbs shock from explosion of mines. Attachment does not hinder fighting capabilities of tank weapons and may be jettisoned from inside tank. ///Army Engineers Photo 1120/*

579. ARMY ORDNANCE GETS FAST CAMERA SHUTTER:

So fast it makes possible taking of photographs at rate of one exposure in five billionths of a second, new Army camera shutter will be ordnance research tool. Army info announcement of Nov. 25 says secret of fast shutter is hermetically sealed, large aperture, wide angle cell with no moving parts. Cell contains chemical which has capability of being "pulsed" electronically. Molecules of chemical will not permit passage of light in "closed shutter" condition, but electrical impulse will realign them to permit transmission of image to make photo.

Electro-Optical Systems of Pasadena will make shutter, Samuel Feltman Ammo Lab at Picatinny Arsenal in N.J. will use it.

///Pentagon OPI 1125/

580. HAWK RADAR SHOWS GREAT PROMISE:

Army's HAWK radar system found so good, is expected to be part of all Army missile systems. Developed by Raytheon, system also found good basis for electronics ground surveillance. Proves step toward dual purpose missiles. Highly selective reaction to movement of predetermined speed makes possible use against low flying aircraft or ground vehicles. Other applications planned. ///Army Times 1109/

ORDNANCE

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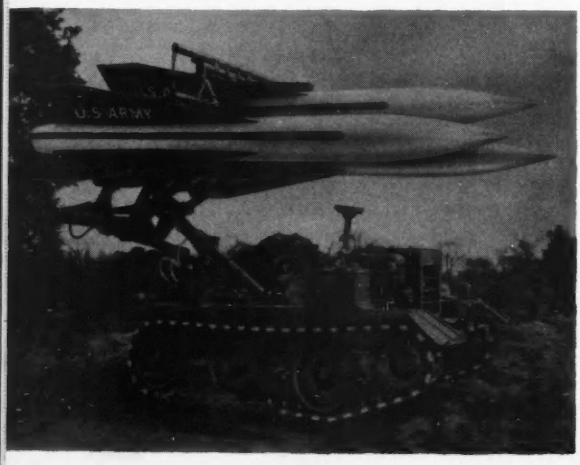

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data

MAGAZINE PREVIEWS & REVIEWS

NEWSWEEK (November 25, 1957)

"Periscoping the Nation" says Maj. Gen. Medaris told White House missile experts JUPITER IRBM's will be so mobile, will be hard for enemy to know in advance where they are deployed... Decision to produce both JUPITER and THOR seems more certain than ever... Navy's first test firing of 6-inch satellite expected Dec. 7... JUPITER-C can carry satellite payload of 200 lbs. or more... "Price Tag for 'Security First'" discusses defense budget (p 33). SPACE AND THE ATOM tells about Defense Secretary McElroy's plans to appoint "single manager" for anti-missile missile program and to give William Holaday broader powers as director of guided missiles... Describes missile testing at Cape Canaveral and has artist's drawing, reconstructing details of area (p 39).

BUSINESS WEEK (November 16, 1957)

"To Meet the Russian Challenge" tells about changes in defense budget and programs; Dr. Orr Reynolds says military spending on basic research may be raised to $180-million next year (p 39). "Anti-Missile" speculates on development of anti-missile missile by Army and Navy (p 41). WASHINGTON OUTLOOK compares Russian and U.S. missile development after WWII (p 56). "Getting Back Into the Missile Race" (editorial) tells about recent U.S. moves designed to speed up development of missiles; mentions ASD Holaday (p 205).

U.S. NEWS AND WORLD REPORT (November 22, 1957)

WASHINGTON WHISPERS says Defense Deputy Secretary Quarles made decision for scientists to handle U.S. earth satellite program, with Navy in charge of rocket launching (p 24). "Mystery of the Sidetracked Satellite" reports, chronologically, U.S. program and plans for launching earth satellite (p 36). WORLDGRAM says U.S. atomic weapons in Korea, nonstop flight of three B-36 jet bombers to Philippines, and nuclear capabilities in U.S. seapower are giving people new idea of U.S. power (p 83).

TIME (November 25, 1957)

"The Power for Now" (cover article) is profile of Gen. Thomas D. White, USAF Chief of Staff; describes AF roles and missions as deterrent to aggression (p 27). "Missiles for NATO" tells about Gen. Lauris Norstad's proposal to place IRBM's in NATO countries (p 25).

(TIME, Nov. 25, continued) "NORAD: Defense of a Continent" relates and has map of North American Air Defense System; says system must be maintained, but modernized as speedily as possible with new, long-range anti-missile radar and interception devices (p 58). "Not-So-Clean Fallout" has findings of Naval Radiological Defense Lab (p 68).

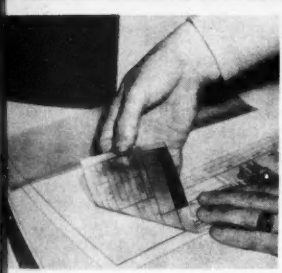
LIFE (November 25, 1957)

"U. S. Business Hews to Its Task" tells how military services and private industry are working together on development and production of missile components and fuels; includes article "We Now Have a Manhattan Project," by Simon Ramo, stating AF's ballistic missile program has met its schedule (pp 33-41). "We Need Pros in the Services" (editorial) says adoption of Cordiner Committee recommendations would correct most serious aspect of military pay problem (p 42).

TRUE MAGAZINE (December 1957)

"How to Catch a Frogman," photographic spread by Robert Halmi, shows how a frogman of Navy's Underwater Demolition Team is released and recovered after has has planted a live mine underwater (p 14).

SUPPORT FOR INDUSTRY



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DATA will change format beginning with the January issue. We are expanding to a larger page size, 8-5/16 x 11, which is the standard page size used by most business magazines.

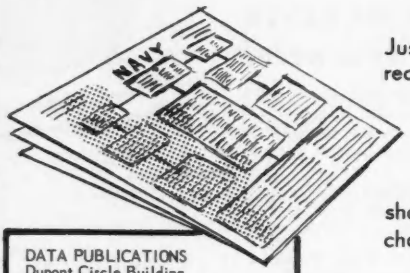
Both AP and UP credited DATA in their stories on PIED PIPER satellite. We are proud that DATA was first with this news.

Increasing accidents in private flying will soon precipitate more revisions by Civil Aeronautics Administration. Tests for private flying licenses will be made more severe. Legislation is also proposed to make installation of radios in all cross-country aircraft mandatory.

For you boat owners, Motorboat Safety, special publication of Merchant Marine Council of U. S. Coast Guard, contains 48 pages of small craft safety information. Free copies of illustrated booklet may be obtained from U. S. Coast Guard Hq., Washington 25, D. C.

Public Relations for Small Business Owners is No. 27 in the Small Business Administration's series of Marketer Aids, can be obtained upon request from Small Business Administration, Lafayette Bldg. Washington 25, D. C.

"WHO'S WHO IN DEFENSE" CHARTS – $1.



Just off the press, DATA Publications has published most recent, authoritative and useful listings of top Department of Defense personnel. Up-to-date names, titles, offices, phone extensions, responsibilities of top officers/civilians filling key posts in DOD and agencies. Chain-of-command diagram-format clearly shows who to call for what. Printed on sturdy 17" x 22" charts suitable for desk tops or wall mounting.

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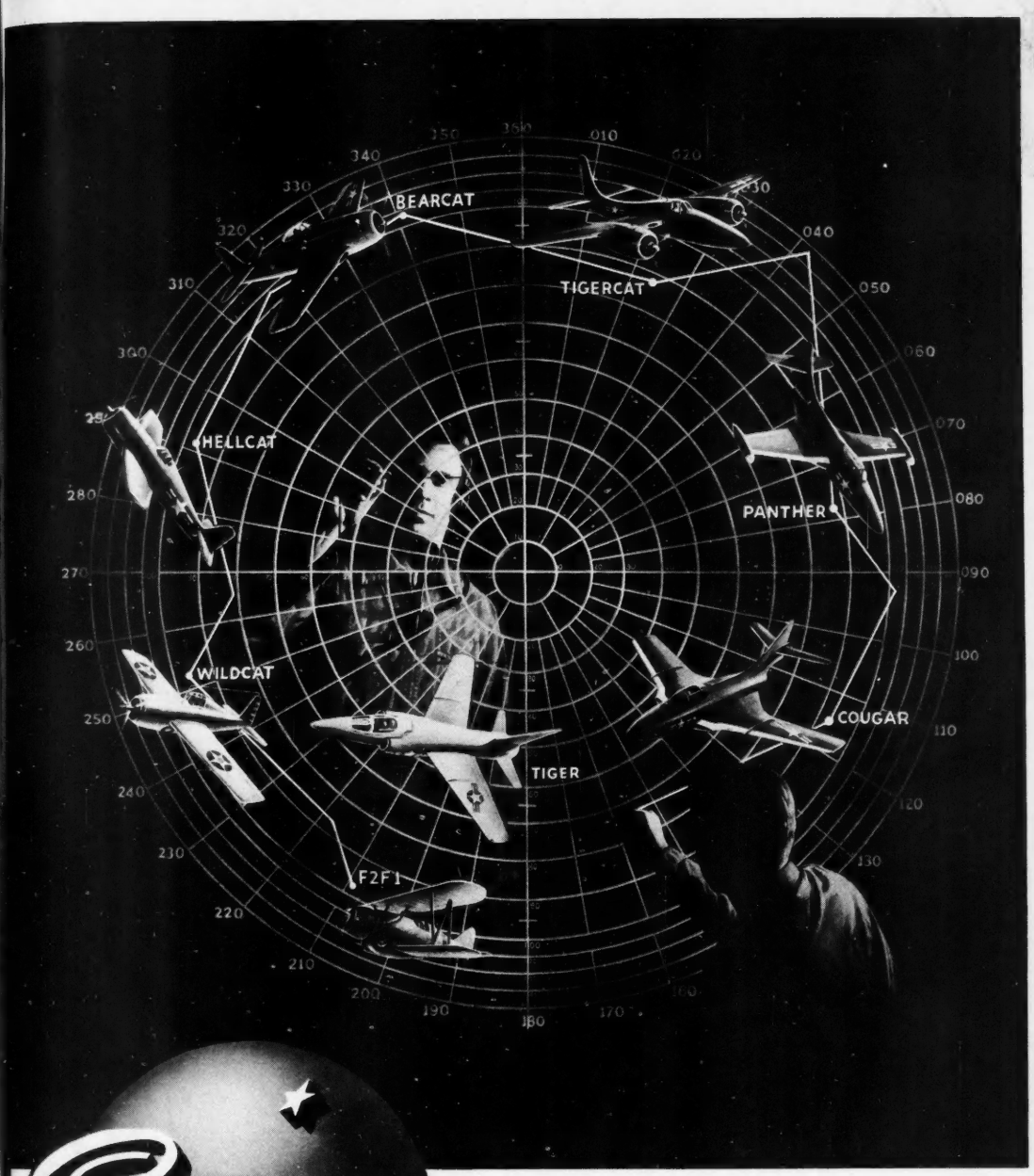

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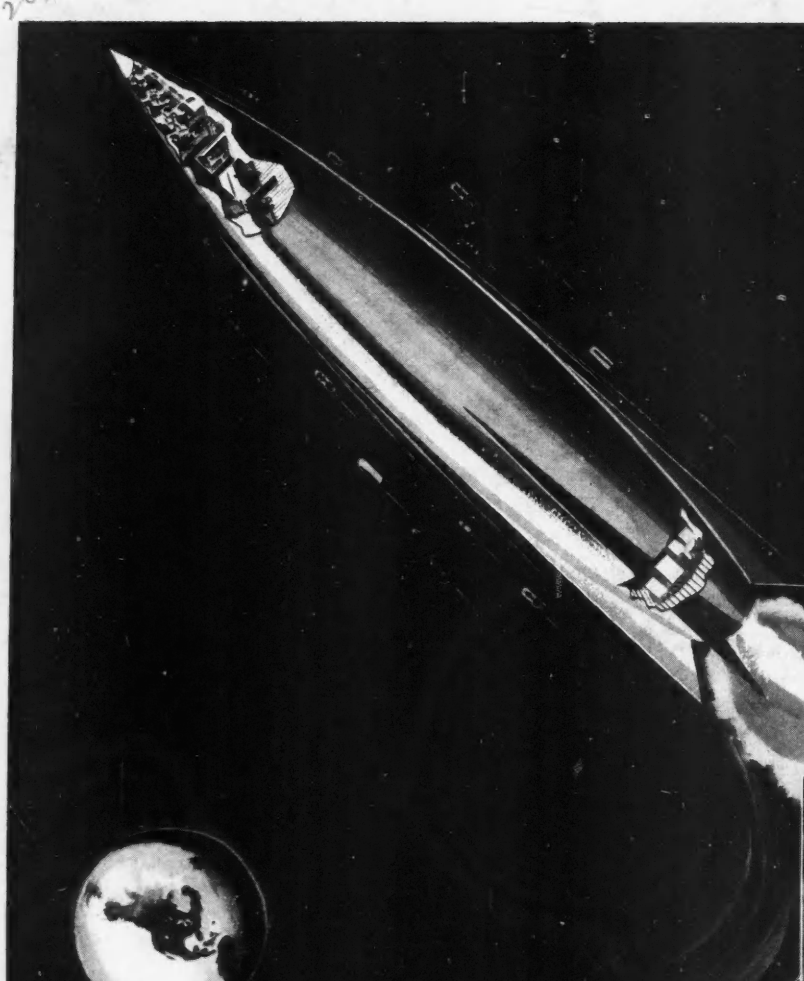

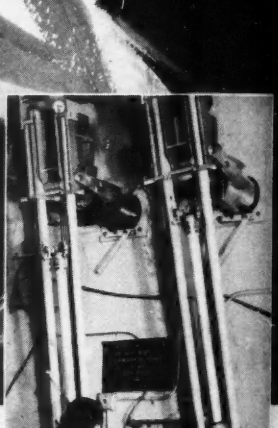

Here, in Admiral's Nucleonics Laboratory, radiation tests are conducted with a cobalt 60 source rated at 20,000 curies. The observer is shielded by 41 inch walls of magnetite ore within steel shells, and a 42 inch lead glass window.

Admiral. research

foretells the future of components traveling in outer spa:e

What kind of power will drive man's first vehicle through outer space? It may be an ion propulsion device powered by a nuclear reactor. Ionic drive is now under investigation for the Air Research and Development Command. Investigators recognize the need to shield the human cargo against radiation if a nuclear power source is carried aboard. They also know that efficient design will not permit shielding the space ship's complex electronic equipment.

Then how will electronic components behave when exposed to nuclear radiation? The facts are being established by a continuing study now in progress at Admiral for the U.S. Air Force. This study provides advance knowledge to engineers charged with designing the space ship's electronic complement.

Admiral has equipped a special Nucleonics Laboratory which includes one of the world's largest cobalt 60 sources of gamma radiation. New instrumentation and techniques have been developed for measuring radiation environments. The project furthers Admiral's leadership in the field of fundamental and applied nuclear research. Detailed information is available to authorized persons.

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